



# Impacts of a word-picture training on reading in youth with mixed intellectual disabilities: A waiting-list control group comparison

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## Introduction

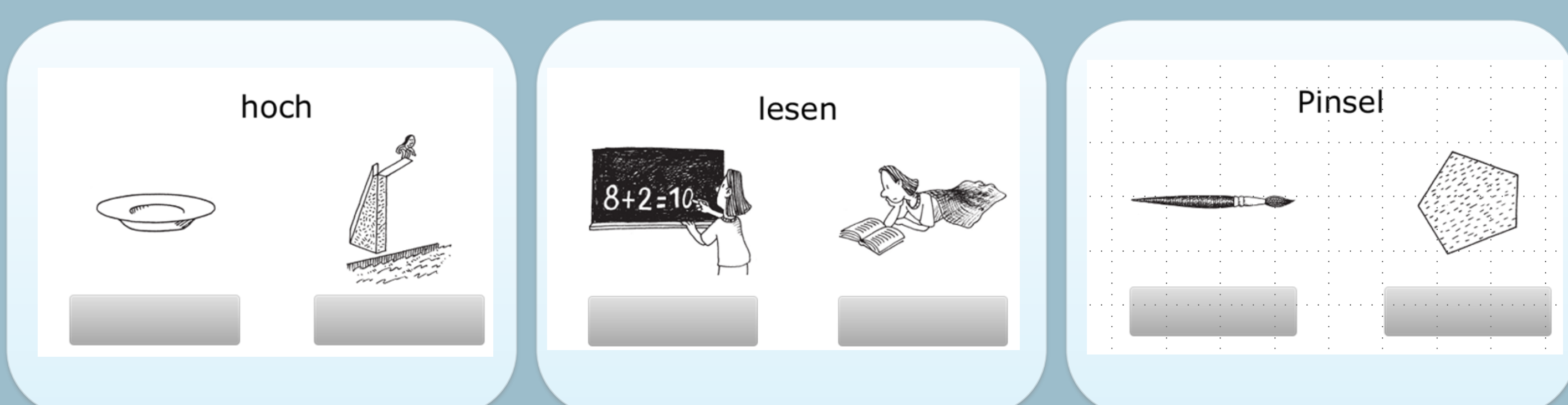
Only one in five children with mild or moderate intellectual disabilities (ID) achieves even minimal literacy skills. Children with ID often struggle with phonetic-based instruction. Therefore, some researchers have advocated using whole-word instruction. By frequent reading, children acquire implicit statistic knowledge about the frequency of letter patterns in written words. These implicit learning processes seem to be largely independent of age and IQ. Semantic connections are also proposed to be important for reading, especially when decoding is only partial. Contextual information like a fitting picture could facilitate storage of words in memory.

We are investigating the effects of a computer-based word-picture training (WPT), which is based on statistical and semantic learning on children with intellectual disabilities (IQ < 75).

## The Word-Picture Training-Program

Pupils were asked to read single words appearing on the screen and to indicate which of two pictures (appearing 2-20 seconds after word Onset) best illustrates the word meaning. The distractor word was always similar in the number of syllables and in lexical category.

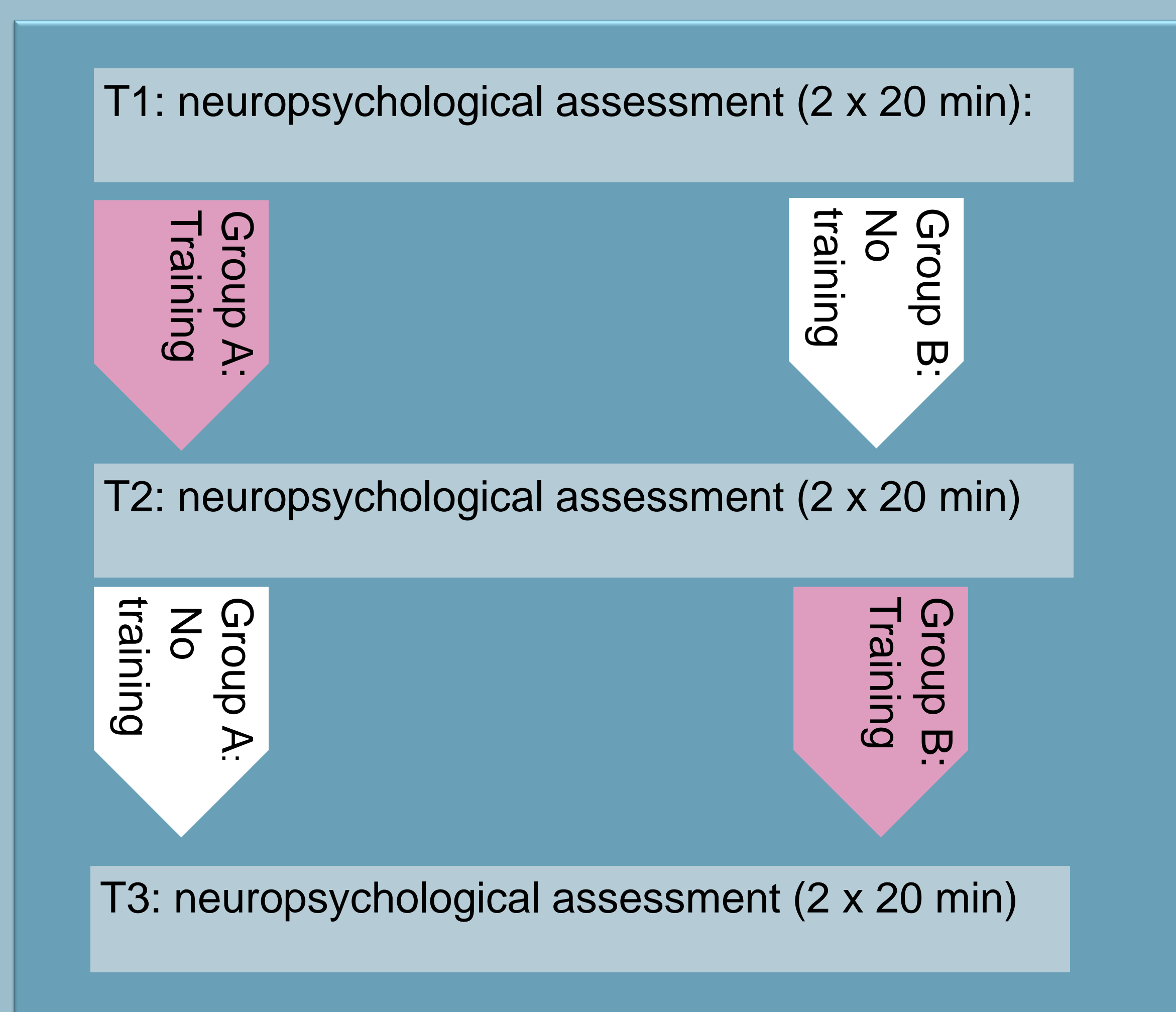
A session consists of 4 stages: Startup, Block 1, Game, Block2, Feedback.



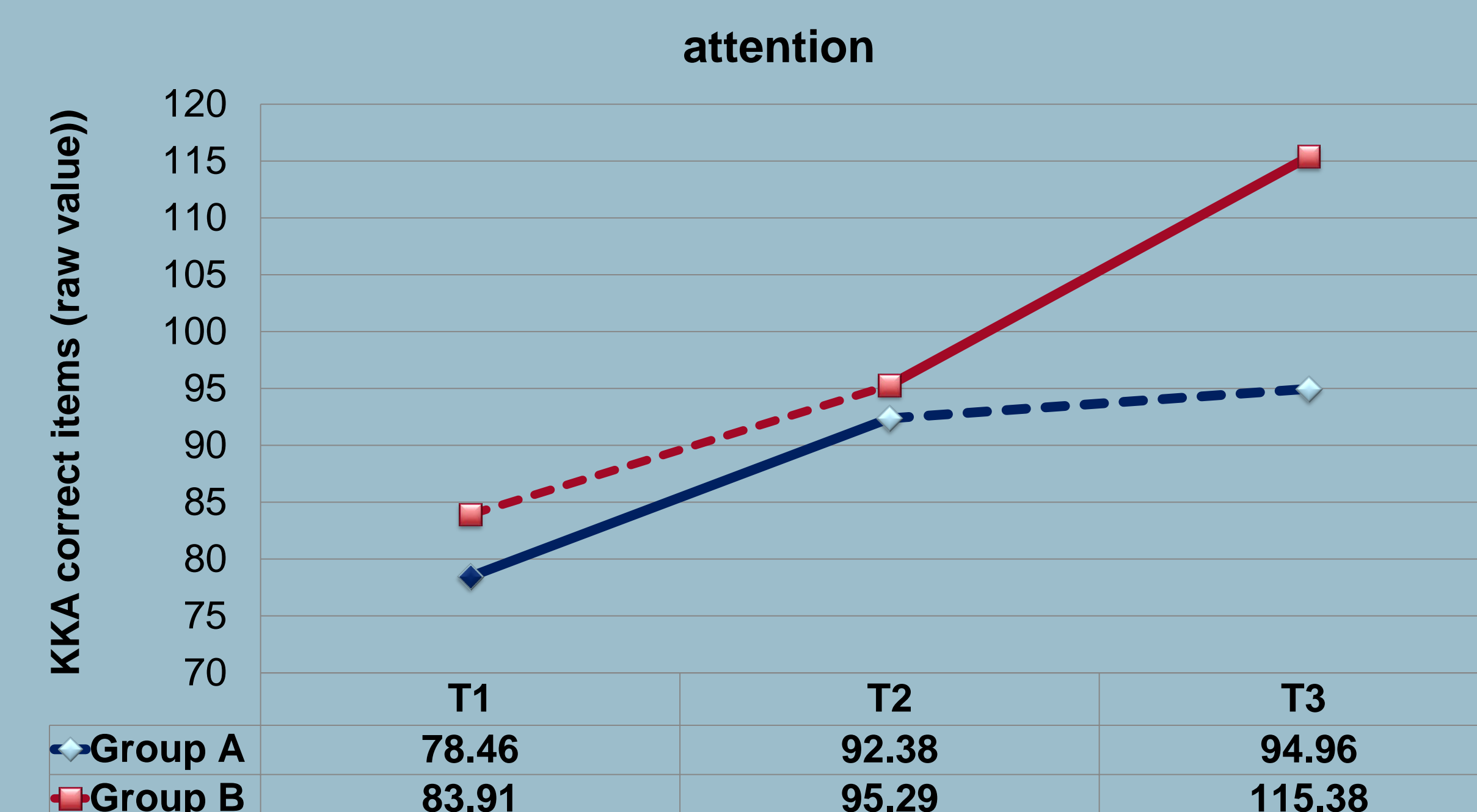
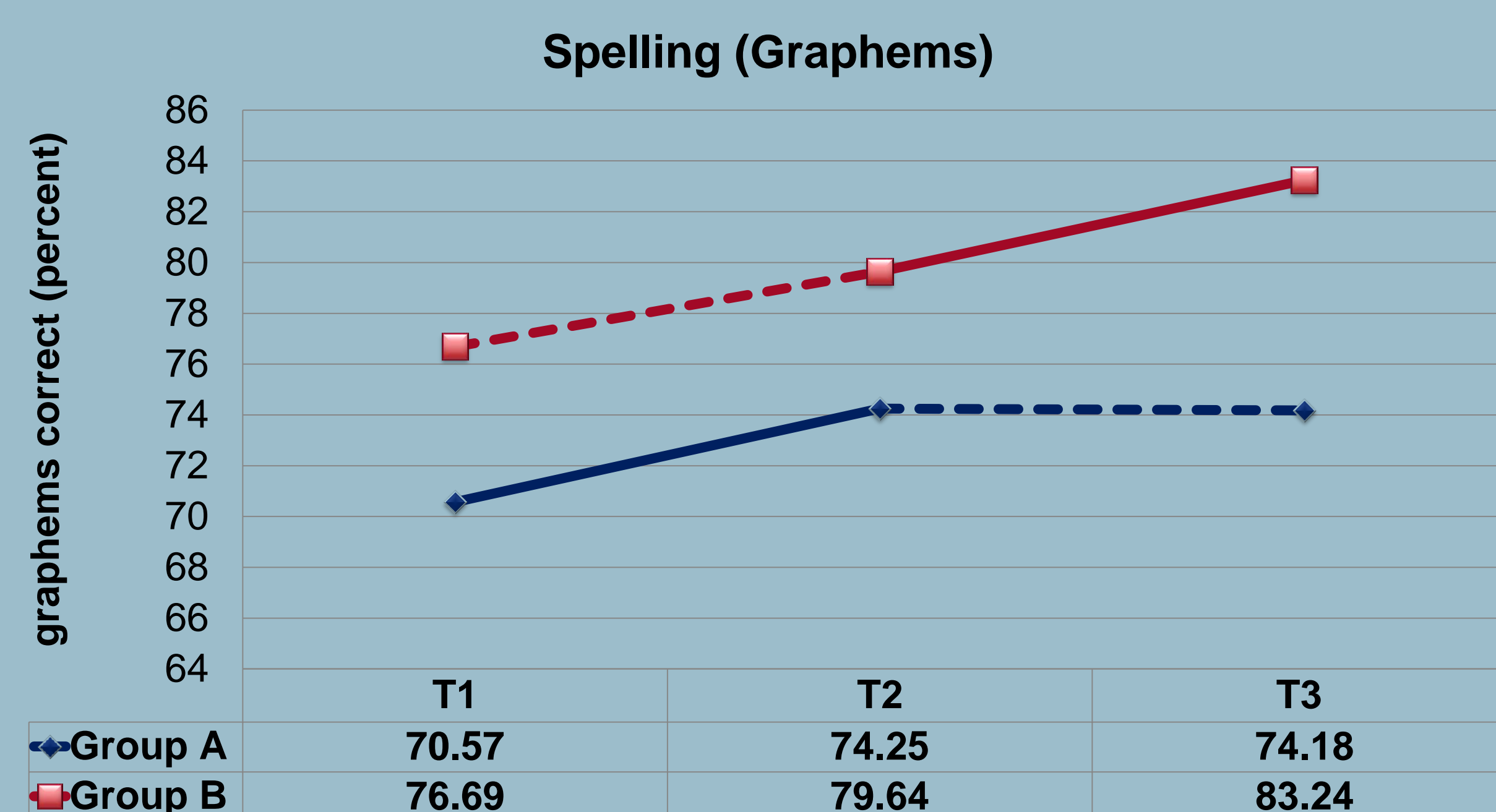
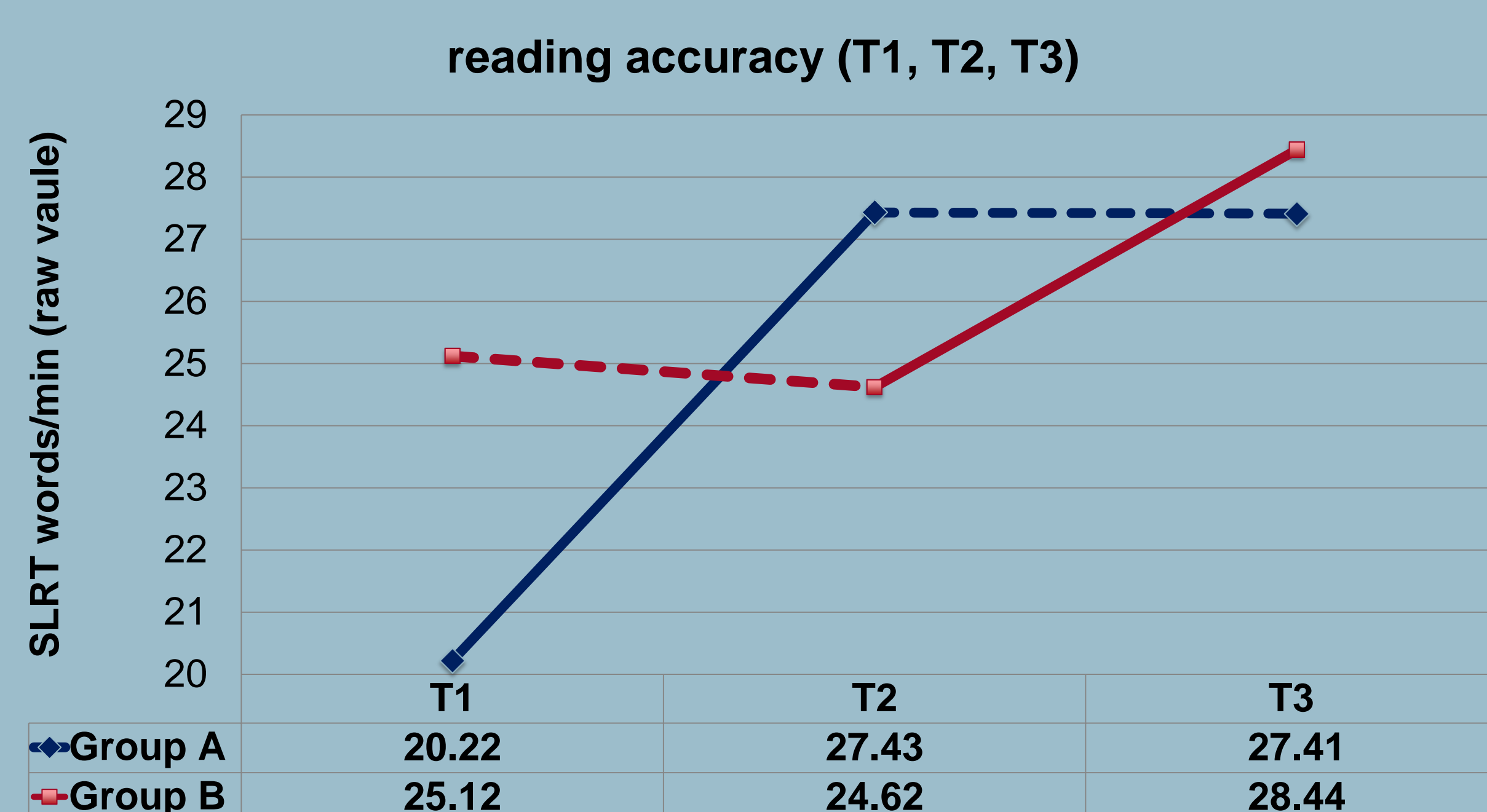
## Participants & Methods

50 children and adolescents from curative education schools in Switzerland with intellectual disabilities (IQ < 75).

- 9-18 years old
- 2 training groups (waiting-control-group design)
- Test battery (T1, T2, T3): phonological awareness, reading, spelling, attention, fluid intelligence, verbal memory, school behavior
- Training: 124 / 225 words divided into 3 subsets (1 subset = 1 training session); 5x/week; 15 min/session, during 4 weeks = 20 training sessions with educator or psychologist



## Results



The word-picture training led to substantial gains in reading. The effects were preserved six weeks later. No significant effects were found in spelling. However, both groups performed better in a focused attention task after training.

## General conclusions

Implicit learning processes, like statistical learning, play an important role in reading. Even students with moderate intellectual disabilities, who often struggle with phonemic-based reading training, can learn to automatically recognize a fairly large corpus of words. Computers can provide the training material in an adaptive and attractive way, for example through playful elements and immediate feedback. These opportunities can scaffold and support reading and attention processes in children and adolescents with intellectual disabilities.

**References:** Pollo, T. C., Kessler, B., & Treiman, R. (2009). Statistical patterns in children's early writing. *Journal of Experimental Child Psychology*, 104(4), 410-426. Browder, D. M., Wakeman, S. Y., Spooner, F., Ahlgrim-Dezell, L., & Algozzine, B. (2006). Research on reading instruction for individuals with significant cognitive disabilities. *Exceptional children*, 72(4), 392-408.

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